

REPORT OF INSECT INFESTATION IN THE DURANGO NATIONAL FOREST

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Insect Control-D 2.

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REPORT OF INSECT INFESTATION  
IN THE DURANGO NATIONAL FOREST.

I arrived in the Durango National Forest on July 19 and left on July 27 spending exactly seven days upon the forest. Although this was an exceedingly short time to examine the existing infestation, I was unable to extend it, due to the necessity of my returning to California at the earliest possible date. The efficient manner, however, in which Supervisor French and Deputy Supervisor Fraser managed my schedule, enabled me to get a very comprehensive idea of the infested areas on the Durango.

AREAS INSPECTED.

I was able to get a general idea of the infestation along the Animas River as far north as Cascade Creek; the area around Electra Lake; the heavily infested areas on Junction, Deep, Dry and Lightner Creeks in the southwestern portion of the Forest; and the extensive infestation on Pine River and Vallecito Creek in the southeastern portion of the Forest. The two control areas of 1917 were also visited and a check area marked adjoining the Elbert Creek Control Project.

General Infestation.

General infestation extends throughout the yellow pine areas, but is heaviest on upper Junction Creek and on Pine River above the junction with Vallecito Creek. In the Animas River, from the Power House to Cascade Creek, a distance of  $5\frac{1}{2}$  miles of canyon, 200 trees killed this year (1918) were counted. Areas were inspected (notably in Junction Creek) where individual sections contained 500 trees which had died this season and also extensive areas averaging 75 infested



trees to the square mile. This infestation has been gradually increasing over a period of four seasons and has been reported by the Supervisor several times. The increase in the seasons of 1917- 1918 over that of 1915 and 1916 has been marked and is nearer the infestation in the Black Hills than probably anything existing at the present time in western yellow pine.

#### Species Infesting.

Dendroctonus ponderosae, the Black Hills beetle is most in evidence, attacking trees from 12" D.B.H. to and including typical western yellow pine as distinguished from "Black Jacks". As the timber attains larger size and becomes more typically western yellow pine, colonies of Dendroctonus barberi become more numerous until the condition becomes reversed, the mature and over mature yellow pines often being killed exclusively by Dendroctonus barberi. Occasionally a tree is killed entirely by Ips, and reproduction is killed by many species, usually secondary, which always become more or less primary under epidemic conditions.

#### Electra Lake Area.

This includes the 320 acres on Elbert Creek experimentally controlled in 1917 and an adjoining 320 acres upon which all the 1918 infested trees were numbered and measured by Rangers Crocker, Price, Rist and myself.

The entire area surrounding Electra Lake was infested, the Elbert Creek Control area, however, showed decided improvement having only 7 infested trees in October, 1917, and 20 trees in July, 1918, where 250 trees were cut and burned in the spring of 1917. The adjoining check area where the trees were marked and numbered on an area approximately of the same extent, contained 56 infested trees ranging from 6" to 28" D.B.H. and infested as follows:

Dendroctonus ponderosae-----	48 trees
" " & barberi-----	5 "
" " " Ips -----	1 "
" barberi & Ips -----	1 "

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Total 56 trees



On the Elbert Creek area we cut a 24" D.B.H. yellow pine, heavily infested with *Dendroctonus ponderosae*, peeling the trunk above the lower branches, lopping and piling the limbs upon the top in a compact pile, raking the bark close to the trunk on each side and burning the whole, leaving only the charred bole of the tree. By this method the bark is all destroyed without blocking the tree off the ground, an unnecessary proceeding. Although the tree burned fiercely the fire did not spread owing to the damp conditions caused by the recent showers.

#### Junction Creek Area.

This infested area includes the middle portion of Junction Creek and the upper part of Deep and Dry Creeks.

The infesting species was mostly *Dendroctonus ponderosae*, the Black Hills Beetle, with occasional trees killed by *Dendroctonus barberi* or combined attacks of both species.

Deep Creek and Junction Creek below Ernest Canyon contained from 60 to 150 infested trees to the section; the upper part of Dry Creek, known as the "Cove" from 100 to 150 to the section and the upper part of Junction Creek above Ernest Canyon from 300 to 500 trees per square mile.

Some of the heaviest portions of the infestation have probably reached the peak of the infestation and may be expected to decline in the future principally because the bulk of the timber has been killed. Some of the slopes on upper Junction Creek with southerly exposures have had 60% of the western yellow pine killed in the last two years.

Outside of these worst centers of infestation the epidemic seems to be still increasing.

Location T. 36 N.- R. 10 W.

Estimated number of infested trees season of  
1918- 3000



Number of square miles heavily infested 18  
11520 acres.

Approximate timber stand 75 million feet B.M.

Estimated cost of control in 1919-- \$2500.00

#### Pine River Area.

This infested area covers the lower watersheds of Vallecito Creek and the watersheds of Los Pinos River from the forest boundary to East Mountain in the western yellow pine stands.

On some of the northern exposures the infestation decreased in 1918, but the infestation generally is still increasing and killing some of the finest trees in one of the best stands of timber on the Durango National Forest. The usual *Dendroctonus ponderosae* and *D. barberi* are responsible for most of the loss. The small area treated in 1917 was too small and narrow to make any appreciable impression on the infested area as a whole. The worked area, however, was not as heavily infested as the outside or surrounding areas. Many small pines killed by secondary bark borers were noticed around unburned tops. This is not due to any negligence on the part of Ranger Shaw as the Bureau of Entomology does not advocate burning trees infested with *Den. ponderosae*. The infestation on this area is of first importance on the Durango and should be controlled. The proper time, however, to institute control measures should have been four years ago when the infestation was first beginning to increase. The importance of an entomologist in charge of insect control is here demonstrated. With some one to look after the infestations in District 2 this epidemic could have been controlled with not more than 20% of the present cost of control. The saving in cost of control and timber values lost in the last three years would pay his salary for more than that period.



Location T. 36 and 37 N. R. 6 W.  
Estimated number of infested trees  
season of 1918 = 2500

Number of square miles infested, -32=20,480 acres  
Approximate timber stand - 165 million ft. B. M.  
Estimated cost of control in 1919 - \$2500.00

#### Methods of Control.

Before discussing methods of control I wish to quote from the latest authority on forest entomology and control measures, Mr. J. M. Swaine, Forest Entomologist of the Dept. of Agriculture of Canada. In his "Canadian Bark Beetles" Pt. 2 Bulletin No. 14 issued Sept. 6, 1918, he says on P. 25.

"The refuse from cutting operations, culls, branches, tops, and stumps afford an ideal breeding ground for practically all our injurious bark-beetles as well as for many other injurious species. Logging operations, settlers clearings, and even cuttings for fire-wood and for trail making, provide slash that may prove a positive menace to surrounding healthy timber", and on Page 24

"Properly conducted slash burning will almost invariably reduce the amount of this annual loss, and it must be regarded as a most valuable method of insect control."

I think that all forest officers with field experience in insect control work will agree with the above statements. Therefore unless the mills operating within or near the infested areas burn their slabs, slash and bark on cull logs at the proper time, there is a constant multiplication of injurious species constantly spreading to the standing timber.

Trees attacked by *Dendroctonus ponderosae*, if wholly in the larval stage when the bark is peeled, would not need to be burned to kill *Dendroctonus ponderosae*; but as nearly all such trees contain *Dendroctonus barberi* and other injurious bark borers which can only be destroyed by fire, and as the use



of fire is more economical than peeling that part of the trunk with limbs, the burning of all trees is therefore recommended, especially as only a proportion of infested trees contain larvae exclusively.

It is therefore recommended, that in control operations:-

1. Trees over 16" D.B.H. be peeled to or just above the lower limbs, the bark raked close to the trunk on each side and so burned in parallel lines on each side of the trunk, while the limbs of the top are lopped, piled in a compact pile over the top of the trunk and so burned.

2. Trees under 16" D.B.H. should be "bucked" into short lengths, piled compactly and burned, care being taken to destroy all the bark.

I could not find that weak brooded trees really existed under epidemic conditions in Colorado, and isolated trees seemed to be the initial stage in "centers of infestation" as such isolated trees were nearly always surrounded by several other infested trees the following year. It can therefore be readily seen that to leave an isolated tree during control operations, in order to treat several trees the following year, is a waste of money and illogical. It is therefore recommended that all infested trees be worked upon the epidemic areas.

#### SUMMARY:

Summarized my suggestions consist-

1. The immediate appointment of some one to take charge of insect control. While I believe he should be an entomologist or at least have a working knowledge of entomology, I believe it is of much more importance that he be a forester and that he should have had Forest Service experience.



2. Allotments recommended on

Pine River Project -----\$2500.00

Junction Creek Project---- 2500.00

Total-- 5000.00

In conclusion I find that general fact on every National Forest upon which I have been, that we do not know how much timber we are losing each year from insects and therefore do not realize the importance of the protection of our forested areas from this menace.

RALPH HOPPING

National Forest Examiner.

Approved:

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